To: robert.alexander@tn.gov[robert.alexander@tn.gov]
From: Shell, Karrie-Jo
Sent: Mon 4/9/2018 12:17:04 PM
Subject: FW: Steam Electric Power Generation
MAIL_RECEIVED: Mon 4/9/2018 12:17:00 PM
Suez Water TVA Allen CC 2018 Priority Pollutant Letter Cooling Tower.pdf
002386_SPECTRUS BD1500.pdf
024788_DEPOSITROL BL6501.pdf

fyi

Karrie-Jo Robinson-Shell, P.E.

Environmental Engineer

US EPA Region 4

Water Protection Division

61 Forsyth Street

Atlanta, GA 30303

(404) 562-9308

From: Balentine, Joshua [mailto:Joshua.Balentine@memphistn.gov]
Sent: Thursday, April 05, 2018 9:28 AM
To: Laurel Rognstad <Laurel.Rognstad@tn.gov>; Wilson, Scott <Wilson.Js@epa.gov>; Jordan, Ronald <Jordan.Ronald@epa.gov>; Shell, Karrie-Jo <Shell.Karrie-Jo@epa.gov>; Ramach, Sean <Ramach.Sean@epa.gov>; Pickrel, Jan <Pickrel.Jan@epa.gov>
Subject: RE: Steam Electric Power Generation

Attached is more information provided by TVA.

Joshua Balentine

Industrial Monitoring Manager

City of Memphis

901.636.4352 901.410.6448

341 Stiles Drive Memphis, TN 38127

Joshua.Balentine@memphistn.gov

From: Laurel Rognstad [mailto:Laurel.Rognstad@tn.gov]
Sent: Tuesday, April 03, 2018 8:50 AM
To: Wilson, Scott; Jordan, Ronald; Shell, Karrie-Jo; Ramach, Sean; Pickrel, Jan; Balentine, Joshua
Subject: RE: Steam Electric Power Generation

Hi Scott.

Thank you for looking into this. I've added Joshua Balentine. Memphis's Industrial Monitoring Manager. to this email. He should be able to answer your questions much better than I can.

Laurel Rognstad | State Pretreatment Coordinator

Division of Water Resources

William R. Snodgrass Tennessee Tower, 11th Floor

312 Rosa L. Parks Avenue

Nashville, TN 37243

p. 615-532-8786

Laurel.Rognstad@tn.gov

tn.gov/environment

From: Wilson, Scott [mailto:Wilson.Js@epa.gov]
Sent: Monday, April 02, 2018 12:52 PM
To: Jordan, Ronald; Shell, Karrie-Jo; Ramach, Sean; Pickrel, Jan
Cc: Laurel Rognstad
Subject: RE: Steam Electric Power Generation

Laurel:

Your question was passed on to me for my thoughts on this issue and I had a couple of quick questions.

The email below says that the TVA effluent concentration for copper and nickel were much greater than in the intake water. Do you have data for the effluent concentrations that you could provide?

Also, did they provide information on the specific cooling tower maintenance chemicals that were used?

Thanks in advance for any information you can provide.

Scott Wilson

Energy Permitting Coordinator

Industrial Permits Branch

USEPA Office of Wastewater Management

1200 Pennsylvania Ave., NW

Washington, DC 20460

202-564-6087

Mail Code: 4203m

From: Phillips, David
Sent: Wednesday, March 28, 2018 4:30 PM
To: Laurel Rognstad <Laurel.rognstad@tn.gov>
Cc: Jordan, Ronald <Jordan.Ronald@epa.gov>
Subject: FW: Steam Electric Power Generation

Laurel,

Unfortunately, it might be some time before I can focus on this inquiry. It might be more expeditious for you to consult our ELG expert on Part 423 for some input on Memphis' two questions (Ron Jordan - jordan.ronald@epa.gov or 202-566-1003), whom I've copied.

David R. Phillips

U.S. EPA Region 4 – Water Protection

Municipal & Industrial Enforcement

404-562-9773 (Tel) 404-562-9729 (Fax)

- Senior Environmental Engineer
- Regional Coordinator: Industrial Pretreatment Program

From: Balentine, Joshua [mailto:Joshua.Balentine@memphistn.gov]
Sent: Wednesday, March 28, 2018 4:17 PM
To: Phillips, David <Phillips.David@epa.gov>

Cc: Laurel.Rognstad@tn.gov; King, Tasha <Tasha.King@memphistn.gov>
Subject: Steam Electric Power Generation

David,

I have a new TVA Steam Electric Power Generation plant that I recently permitted. The federal regs at 40 CFR 423.17(d)(1) states that the pollutants discharged in cooling tower blowdown shall have no detectable amount for the 126 priority pollutants contained in chemical added for cooling tower maintenance (excluding Chromium and Zinc). The regs go on further to allow at the permitting authority's discretion, instead of the monitoring in 40 CFR 122.11(b), compliance with the standards for the 126 priority pollutants in paragraph (a)(4)(i) of this section may

be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

TVA originally wanted to submit the Engineering Calcs that demonstrate the priority pollutants are not detectable at the final effluent. We verbally agreed that TVA would collect one set of samples to confirm that the priority pollutants were not present, and then we would approve the engineering calcs in lieu of sampling going forward. TVA's samples showed detectable values for copper (0.00228 mg/L) and nickel (0.00287 mg/L).

TVA is stating that the source of copper and nickel is not from the cooling tower chemicals, but from the source water. They have sampling data that does confirm this. Albeit, the concentrations in the source water are much lower than the values detected in the effluent. TVA claims that this is due to the evaporation of water and metals concentrating. The purpose of blowing down cooling water is due to minerals concentrating to the point that they are too high, and makeup water is added to the basin.

There are multiple options/questions I have for you to help assist me in:

1. Since TVA believes that the source of the pollutants is the source water and not the cooling tower chemicals themselves, TVA requests that the engineering calcs in lieu of monitoring state the following:

"At the discretion of the City of Memphis, instead of the monitoring, compliance with the standards for the 126 priority pollutants may be determined by engineering calculations which demonstrate that the regulated pollutants (126 priority pollutants contained in chemicals added for cooling tower maintenance) are not detectable in the final discharge by the analytical methods in 40 CFR part 136."

Please note that the red text is different than what the federal regs state at 30 CFR 423.17(b)(ii). TVA assert that this is more consistent with the development documents and the final rule publication in the federal register as shown below:

47 FR 52290 Excerpt No. 1

Toxics. The discharge of one hundre twenty-four toxic pollutants is prohibited in detectable amounts from cooling tower discharges if the pollutants come from cooling tower maintenance chemicals. The discharger may demonstrate compliance with such limitations to the permitting authority by either routinely sampling and analyzing for the pollutants in the discharge, or providing mass balance calculations to demonstrate that use of particular maintenance chemicals will not result in detectable amounts of the toxic pollutants in the discharge. In addition, EPA is promulgating a daily maximum BAT limitation and NSPS for chromium and zinc based upon concentrations of 0.2 mg/l and 1.0 mg/l, respectively.

47 FR 52290 Excerpt No. 2

Commenters objected to the propos zero discharge requirement for maintenance chemicals, raising concerns about the regulation of maintenance chemicals instead of priority pollutants and the means of measuring compliance with a zero discharge limit. In response, we have substituted "no detectable" for "zero discharge" and made clear that the li applies to priority pollutants from maintenance chemicals, and not the chemicals themselves. EPA presently considers the nominal detection limit most of the toxics to be 10 μg/l (i.e., 1 parts per billion). See, *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants,* EPA, 1977.

47 FR 52290 Excerpt No. 3

Another concern expressed by commenters was that EPA did not account for those prohibited toxic: are present in new construction materials for cooling towers. For example, wooden supporting struc or other construction materials in or rebuilt cooling towers may cont preservatives which contain trace amounts of certain of the toxic pollutants. These may leach for a pe of time from contact with the coolin water. The Agency recognizes such situations. Thus, the prohibition in t final rule, as in the proposed rule, is applicable only to pollutants that ar present in cooling tower blowdown result of cooling tower maintenance chemicals.

2. Another approach could be that as long as the detectable amount is less than 0.01 mg/L (10µg/L), TVA could be considered compliant with the regulations, since the final rule (47 FR 52290) states that the minimum detection level required for analysis is 0.01 mg/L (10µg/L).

Commenters objected to the proposed zero discharge requirement for maintenance chemicals, raising concerns about the regulation of maintenance chemicals instead of priority pollutants and the means of measuring compliance with a zero discharge limit. In response, we have substituted "no detectable" for "zero discharge" and made clear that the limit applies to priority pollutants from maintenance chemicals, and not the chemicals themselves. EPA presently considers the nominal detection limit for most of the toxics to be 10 µg/l (i.e., 10 parts per billion). See, *Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants,* EPA, 1977.

3. Another approach could be a Net/Gross variance based on the concentrations of nickel and copper in the source water. This is a valid approach (in my opinion) since our local limits for those two parameters are substantially higher than the current limit of no detectable amount.

4. The final approach is to leave the permit like it is, and make TVA meet the no detectable amount limits for all priority pollutants.

The City of Memphis really needs EPA to weigh in on this, so TVA will accept the decision that is made. Ultimately, I think the federal regs and the federal register publication are confusing with respect to No.1. I think that the federal register vaguely supports TVAs argument that the limit applies to the final discharge but only form pollutants added from cooling tower

maintenance chemicals. However I can't get past the fact that the PSNS specifically states that the pollutants discharged in cooling tower blowdown shall have no detectable amount for the 126 priority pollutants. I am not comfortable agreeing to the modification TVA requested in NO.1 without TDEC or EPAs approval. However, if you are in agreement with No. 2, this would be just as easy of an option for all parties.

I know this is an information overload, so please give me a call if you have any questions, or are extremely confused by all of this. Thanks.

Joshua Balentine

Industrial Monitoring Manager

City of Memphis

901.636.4352 901.410.6448

341 Stiles Drive Memphis, TN 38127

Joshua.Balentine@memphistn.gov

SUEZ

SAFETY DATA SHEET
SPECTRUS* BD1500

1. Identification

Product identifier SPECTRUS BD1500

Other means of identification None.

Recommended use Water based deposit control agent.

Recommended restrictions None known.

Company/undertaking identification

SUEZ WTS USA, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355 3300, F 215 953 5524

Emergency telephone

(800) 877 1940

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement The mixture does not meet the criteria for classification.

Precautionary statement

Prevention Observe good industrial hygiene practices.

Response Wash hands after handling.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

The manufacturer lists no ingredients as hazardous according to OSHA 29 CFR 1910.1200.

Composition comments Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation Move to fresh air. For breathing difficulties, oxygen may be necessary. If breathing stops, provide artificial respiration. Get medical attention immediately.

Skin contact Wash with plenty of soap and water. Get medical attention if irritation develops or persists.

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Do not induce vomiting. Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Alkaline. Wear appropriate protective equipment and clothing during clean-up. See Section 8 of the SDS for Personal Protective Equipment. Ventilate area, use specified protective equipment.
Methods and materials for containment and cleaning up	Stop the flow of material, if this is without risk. Following product recovery, flush area with water. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Water contaminated with this product may be sent to a sanitary sewer treatment facility, or a permitted waste treatment facility, in accordance with any local agreements.

7. Handling and storage

Precautions for safe handling	Alkaline. Do not mix with acidic material. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection	Splash proof chemical goggles.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Glove selection must take into account any solvents and other hazards present.
Other	Wear suitable protective clothing. Protective clothing if splashing or repeated contact with product is likely.

Respiratory protection	A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE. If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Color	Colorless
Physical state	Liquid
Odor	Slight
Odor threshold	Not available.
pH (concentrated product)	12.5
Melting point/freezing point	31 °F (-1 °C)
Initial boiling point and boiling range	220 °F (104 °C)
Flash point	Not applicable.
Evaporation rate	< 1 (Ether = 1)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	18 mm Hg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	< 1 (Air = 1)
Relative density	1.02
Relative density temperature	70 °F (21 °C)
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	11 cps
Viscosity temperature	70 °F (21 °C)
Other information	
Pour point	26 °F (-3 °C)
Specific gravity	1.02
VOC	0 % (Estimated)

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials.

Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Oxides of carbon evolved in fire.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Mists/aerosols may cause irritation to upper respiratory tract.
Skin contact	Prolonged or repeated contact may cause transient irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Prolonged and repetitive exposure, depending on the route(s), may develop transient irritation on skin, eyes, ingestion tract, and/or respiratory tract.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
SPECTRUS BD1500 (CAS Mixture)		
Acute		
[redacted]		
LD50	Rabbit	> 5000 mg/kg, (Calculated according to GHS additivity formula)
[redacted]		
LD50	Rat	> 5000 mg/kg, (Calculated according to GHS additivity formula)

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory or skin sensitization	
Respiratory sensitization	This product is not expected to cause respiratory sensitization.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Based on available data, the classification criteria are not met.

12. Ecological information

Ecotoxicity

Product		Species	Test Results
SPECTRUS BD1500 (CAS Mixture)			
	0% Mortality	Fathead Minnow	2000 mg/l, Static Bioassay with 48-Hour Renewal, 96 hour

Product		Species	Test Results
		Menidia beryllina (Silversides)	5000 mg/l, Static Acute Bioassay, 96 hour
	25% Mortality	Mysid Shrimp	5000 mg/l, Static Acute Bioassay, 96 hour
	EC50	Selenastrum (algae)	> 8000 mg/l, Growth Inhibition, 96 hour, (pH adjusted)
	IC25	Ceriodaphnia	652 mg/l, Static Renewal Bioassay, 7 day
		Fathead Minnow	3000 mg/l, Static Renewal Bioassay, 7 day
	LC50	Ceriodaphnia	> 3000 mg/l, Static Renewal Bioassay, 48 hour
		Fathead Minnow	> 3000 mg/l, Static Renewal Bioassay, 7 day
	NOEL	Mysid Shrimp	2500 mg/l, Static Acute Bioassay, 96 hour
		Selenastrum (algae)	8000 mg/l, Growth Inhibition, 96 hour, (pH adjusted)
Aquatic			
Crustacea	0% Mortality	Daphnia magna	2000 mg/l, Static Acute Bioassay, 48 hour
Fish	NOEL	Rainbow Trout	3000 mg/l, Static Renewal Bioassay, 96 hour

Bioaccumulative potential	Not available.
Mobility in soil	No data available.
Other adverse effects	Not available.
Persistence and degradability	Testing has shown product not to be readily biodegradable.
- COD (mgO2/g)	235
- BOD 5 (mgO2/g)	13,35
- BOD 28 (mgO2/g)	45,3
- Closed Bottle Test (% Degradation in 28 days)	15 OECD 301D
- Zahn-Wellens Test (% Degradation in 28 days)	9 (calculated data)
- TOC (mg C/g)	80 (calculated data)

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory information

US federal regulations This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130) Hazardous substance

Safe Drinking Water Act (SDWA) Not regulated.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

Food and drug administration 21 CFR 176.170 (components of paper and paperboard in contact with aqueous and fatty foods)

NSF Registered and/or meets USDA (according to 1998 guidelines): Registration No. – 141059
Category Code(s):
G5 Cooling and retort water treatment products
G7 Boiler, steam line treatment products – nonfood contact

US state regulations

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

No ingredient listed.

US - Massachusetts RTK - Substance List

Not regulated.

US - Pennsylvania RTK - Hazardous Substances

Not regulated.

US - Rhode Island RTK

Not regulated.

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

16. Other information, including date of preparation or last revision

Issue date	Dec-03-2014
Revision date	Dec-16-2017
Version #	2.2
List of abbreviations	CAS: Chemical Abstract Service Registration Number TWA: Time Weighted Average STEL: Short Term Exposure Limit LD50: Lethal Dose, 50% LC50: Lethal Concentration, 50% NOEL: No Observed Effect Level COD: Chemical Oxygen Demand BOD: Biochemical Oxygen Demand TOC: Total Organic Carbon IATA: International Air Transport Association IMDG: International Maritime Dangerous Goods Code ACGIH: American Conference of Governmental Industrial Hygienists TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.
References:	No data available
Disclaimer	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Revision information	This document has undergone significant changes and should be reviewed in its entirety.
Prepared by	This SDS has been prepared by SUEZ Regulatory Department (1-215-355-3300).

* Trademark of SUEZ. May be registered in one or more countries.

SUEZ

SAFETY DATA SHEET
DEPOSITROL* BL6501

1. Identification

Product identifier DEPOSITROL BL6501

Other means of identification None.

Recommended use Deposit control agent

Recommended restrictions None known.

Company/undertaking identification

SUEZ WTS USA, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355 3300, F 215 953 5524

Emergency telephone

(800) 877 1940

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Causes severe skin burns and eye damage. Causes serious eye damage. May cause respiratory irritation.

Precautionary statement

Prevention Wear eye/face protection. Do not breathe mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area.

Response If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor/. Wash contaminated clothing before reuse.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Components	CAS #	Percent
Phosphonic acid, (1-hydroxyethylidene)bis-	2809-21-4	10 - 20

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

Composition comments Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.

General information If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Protect from freezing. If frozen, thaw completely and mix thoroughly prior to use. Avoid exposure to the atmosphere. Avoid high temperatures.

8. Exposure controls/personal protection

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Splash proof chemical goggles. Face shield.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Glove selection must take into account any solvents and other hazards present.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Chemical respirator with organic vapor cartridge and full facepiece. A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Color	Amber
Physical state	Liquid
Odor	Slight
Odor threshold	Not available.
pH (concentrated product)	1.2
pH in aqueous solution	2 (5% SOL.)
Melting point/freezing point	25 °F (-4 °C)
Initial boiling point and boiling range	220 °F (104 °C)
Flash point	Not applicable.
Evaporation rate	< 1 (Ether = 1)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	18 mm Hg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	< 1 (Air = 1)

Relative density	1.18
Relative density temperature	70 °F (21 °C)
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	14 cps
Viscosity temperature	70 °F (21 °C)
Other information	
Pour point	30 °F (-1 °C)
Specific gravity	1.178
VOC	0 % (Estimated)

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with strong bases may cause a violent reaction releasing heat.
Incompatible materials	Avoid contact with strong bases. Avoid contact with strong oxidizers.
Hazardous decomposition products	Oxides of carbon, nitrogen, phosphorus, and sulphur evolved in fire.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation.

Information on toxicological effects

Acute toxicity May cause respiratory irritation.

Product	Species	Test Results
DEPOSITROL BL6501 (CAS Mixture)		
Acute		
[redacted]		
LD50	Rabbit	> 5000 mg/kg, (Calculated according to GHS additivity formula)
[redacted]		
LD50	Rat	> 5000 mg/kg, (Calculated according to GHS additivity formula)

Components	Species	Test Results
Phosphonic acid, (1-hydroxyethylidene)bis- (CAS 2809-21-4)		
Acute		
[redacted]		
LD50	Rabbit	> 7940 mg/kg
[redacted]		
LD50	Rat	1878 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Based on available data, the classification criteria are not met. May be harmful if swallowed and enters airways.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product		Species	Test Results
DEPOSITROL BL6501 (CAS Mixture)			
	LC50	Ceriodaphnia	1414 mg/L, Static Renewal Bioassay, 96 hour, (pH adjusted)
		Fathead Minnow	5984 mg/L, Static Renewal Bioassay, 96 hour, (pH adjusted)
	NOEL	Ceriodaphnia	1000 mg/L, Static Renewal Bioassay, 96 hour, (pH adjusted)
		Fathead Minnow	4000 mg/L, Static Renewal Bioassay, 96 hour, (pH adjusted)
Aquatic			
Fish	LC50	Rainbow Trout	6562 mg/L, Static Renewal Bioassay, 96 hour, (pH adjusted)
	NOEL	Rainbow Trout	4000 mg/L, Static Renewal Bioassay, 96 hour, (pH adjusted)

Bioaccumulative potential	
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.
Environmental fate	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	No data is available on the degradability of this product.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Via an authorized waste disposal contractor to an approved waste disposal site, observing all local and national regulations.

Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company. D002= Corrosive
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

NSF Registered and/or meets USDA (according to 1998 guidelines):

Registration No. – 141933
Category Code(s):
G5 Cooling and retort water treatment products
G7 Boiler, steam line treatment products – nonfood contact

US state regulations

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

No ingredient listed.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

No ingredient listed.

US - Massachusetts RTK - Substance List

Not regulated.

US - Pennsylvania RTK - Hazardous Substances

Not regulated.

US - Rhode Island RTK

Not regulated.

US. California Proposition 65

Not Listed.

16. Other information, including date of preparation or last revision

Issue date	Dec-03-2014
Revision date	Dec-20-2017
Version #	3.3
List of abbreviations	CAS: Chemical Abstract Service Registration Number ACGIH: American Conference of Governmental Industrial Hygienists TWA: Time Weighted Average STEL: Short Term Exposure Limit LD50: Lethal Dose, 50% LC50: Lethal Concentration, 50% NOEL: No Observed Effect Level COD: Chemical Oxygen Demand BOD: Biochemical Oxygen Demand TOC: Total Organic Carbon IATA: International Air Transport Association IMDG: International Maritime Dangerous Goods Code TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.
References:	No data available
Disclaimer	The information in the sheet was written based on the best knowledge and experience currently available. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Revision information	Physical & Chemical Properties: Multiple Properties
Prepared by	This SDS has been prepared by SUEZ Regulatory Department (1-215-355-3300).

* Trademark of SUEZ. May be registered in one or more countries.

4-Apr-18

David Thorpe
TVA Allen Combined Cycle Plant
2480 Hennington Ave.
Memphis TN 38109

Dear Mr Thorpe,

Priority pollutants are defined in the US EPA Clean Water Act under 40 CFR 423 Appendix A: http://water.epa.gov/scitech/methods/cwa/pollutants.cfm . The table presented below summarizes the priority pollutant status of each product concerned.

This data is provided to identify contaminants of concern related to products directly discharged to surface waters. Our products are not intentionally formulated using ingredients containing priority pollutants; rigorous manufacturing, clean-out, and batch sequencing procedures are used to minimize cross-contamination. However, it may be determined upon testing neat product trace levels of contaminants are detected. Under normal applications, the concentrations of these contaminants in the neat product is expected to fall below detectable levels resulting in no measurable amounts in the discharge.

Except where formulation review is noted, all products were analyzed for the 126 priority pollutants according to published EPA analytical methods and procedures most of which can be found under 40 CFR Part 136. http://water.epa.gov/scitech/methods/cwa/index.cfm Detection limits for the complete priority pollutant scan are established by the test method or altered due to the matrix of the sample.

For those products not tested, a formulation review was conducted by examination of the product chemical composition and available supplier data to calculate a theoretical priority pollutant concentration. When possible formulation reviews are compared against similar products having actual tested priority pollutant analysis data. To the best of our knowledge the products indicating formulation review do not contain the Priority Pollutants listed under 40 CFR 423 Appendix A.

Product	Analysis Type	Result
Depositrol BL6501	Tested 7/12/10	No measurable pollutants when applied at < 10000 ppm product.
Spectrus BD1500	Tested 4/15/04	No measurable pollutants when applied at < 10000 ppm product.
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Should you have any questions or require any additional information on our products, please contact your SUEZ Water Technologies & Solution sales representative.

Sincerely,

Colleen M. Woodward

SUEZ Water Technologies & Solutions
Product Compliance- Global Regulatory Leader
4636 Somerton Road
Trevose, PA 19053